



United States
Environmental Protection
Agency

Indoor Environment Division
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PREVALENCE AND IMPLEMENTATION OF INDOOR AIR QUALITY (IAQ) PROGRAMS IN U.S. SCHOOLS

Background

Overview of Survey

The Office of Radiation and Indoor Air's Indoor Environments Division of the U.S. EPA conducted the IAQ Practices in Schools Survey in 2002 to examine the extent to which public and private schools nationwide are implementing effective indoor air quality (IAQ) management programs. This data was used to establish a new baseline for EPA's *IAQ Tools for Schools (IAQ TfS)* Program.

The 2002 IAQ Practices in Schools Survey established for the first time firm baseline data against which the Agency measures progress toward its performance goal of 35% of schools (or 40,000 schools) using effective IAQ management practices by 2012. Prior to this survey, EPA has relied on expert judgment in the field to assume the initial baseline was close to zero in the mid-1990s.

In 2006, EPA collaborated with the U.S. Department of Health and Human Services Centers for Disease Control and Prevention (CDC) to gather updated data on IAQ practices in schools. EPA and CDC included a module of questions on IAQ and environmental conditions in CDC's 2006 School Health Policies and Programs Study (SHPPS). SHPPS, conducted every six years, surveys states, school districts, and schools about a broad set of health related policies and programs. Previously, air quality and other environmental issues were not included in this effort. EPA and CDC intend to continue this collaboration in the future. Results from the 2006 SHPPS will be available in Fall 2007.

In the interim period between these national surveys, EPA also tracks annual national progress regarding *IAQ TfS* implementations based on reports from Regional EPA offices, national and local grantees, school districts, and other sources. Based on the 2002 IAQ Practices in Schools Survey and annual progress reports since then, EPA estimates about 30% of schools (or 35,000 schools) are using effective IAQ management practices as of 2006. This estimate will be updated when new data from SHPPS is available in 2007.

Reasons for Survey

- ▶ Improper building operations and deferred maintenance contribute to poor indoor environmental conditions related to adverse health, performance, and productivity outcomes.^{1, 3-5}
- ▶ Mounting scientific evidence, along with anecdotal data, show that the effective management of IAQ in schools can reduce students' exposure to indoor air pollutants that trigger allergies, asthma attacks, and other adverse health outcomes.^{4, 5}
- ▶ Asthma accounts for 14 million missed school days, while allergies are estimated to be the cause of an additional 2 million lost school days annually.²
- ▶ This is the first survey designed to gain information about the number of schools nationwide that have implemented IAQ management programs.¹

Survey Components¹

- ▶ The four-page IAQ Practices in Schools Survey contained 11 multipart questions administered to a nationally representative sample of schools.
- ▶ Participants - including principals, administrators and facility managers, among others - were asked to provide information on the use, administration, implementation, challenges, and benefits of the IAQ program in their school.
- ▶ An IAQ Practice Index with a range of 0 to 100 was designed to quantify the extent of each school's IAQ management practices.

Survey Sample¹

- ▶ A random sample of schools, stratified by geographic region and school type, was generated from the 1999-2000 dataset of the National Center of Educational Statistics.
- ▶ There were 118,785 eligible facilities, 2,004 surveys mailed, and 809 surveys returned. The error rate for the survey sample size is within a 3% margin.

Key Findings¹

- ▶ 22% of schools (or 26,000 schools) have an effective IAQ management program consistent with EPA guidance.
- ▶ Cost, lack of resources or knowledge, and competing priorities were the most frequent barriers to implementation of an IAQ program among schools that do not have a program.
- ▶ Survey data indicates that schools with an IAQ management program supported by school administration and implemented by an IAQ Coordinator may expect to realize improvements in workplace satisfaction, decreased asthma episodes, increased attendance, and other measures of school performance.

IAQ Practice Index¹

- ▶ The survey results revealed that the quality and effectiveness of IAQ management programs varied widely, from 20.6 to 100.
- ▶ The IAQ Practice Index was positively correlated with level of administrative support and designation of a program manager or coordinator.

Benefits of IAQ Programs¹

Respondents indicated that their IAQ programs led to

- improved workplace satisfaction,
- fewer asthma attacks,
- fewer visits to the school nurse, and
- lower absenteeism.

For more information visit:

- ▶ www.epa.gov/iaq/schools

Additional Resources

¹Moglia D, Smith A, MacIntosh D, and Somers J, 2005. Prevalence and Implementation of IAQ Programs in U.S. Schools. Available: <http://ehponline.org/members/2005/7881/7881.pdf>

²Centers for Disease Control and Prevention. 2002. Surveillance for asthma 1980-1999. MMWR Morb Mortal Wkly Rep 51:5-9. Available: <http://www.cdc.gov/mmwr/PDF/ss/ss5101.pdf>

³Lewis L, Snow K, Farris E, Smerdon B, Cronen S, Kaplan J, et al. 2000. Condition of America's Public School Facilities: 1999. NCES 2000-032. Washington, DC:U.S. Department of Education, National Center for Education Statistics. Available: <http://nces.ed.gov/surveys/frss/publications/2000032>

⁴U.S. EPA. 2004. Scientific Findings of Health and Productivity in Support of Indoor Environmental Quality Management of Buildings. Washington, DC: U.S. Environmental Protection Agency. (Available upon request)

⁵U.S. EPA. 1995. *Indoor Air Quality Tools for Schools Action Kit*. Washington, DC:U.S. Environmental Protection Agency. Available: <http://www.epa.gov/iaq/schools>

Survey Results¹

Prevalence of IAQ Programs

- ▶ Approximately 42% of schools nationwide have some type of IAQ management program.
- ▶ Approximately 22% of schools have an effective IAQ management program consistent with EPA guidance (an IAQ Practice Index of 70 or more).
- ▶ 36% of schools with an IAQ management program had an IAQ plan in place for > 5 years, 22.5% of schools for 2-4 years, 19.6% of schools for 1-2 years, and 13% of schools for < 1 year.
- ▶ The prevalence of IAQ management programs was similar between rural and non-rural schools. 37% of rural schools and 45% of non-rural schools reported having an IAQ program.